E.N.T.

Ear

Case 1: Boy was admitted at the pediatric ward with c/o unable to take feed from birth, hanving cough, eye discharge, hearing problems, and regurgitation of milk via nose and mouth. On general physical examination it revealed that ears were under developed. Difference in shape, size were small and were not normally placed as shown in given figure. The buy is suffering fro which grade of microtia?

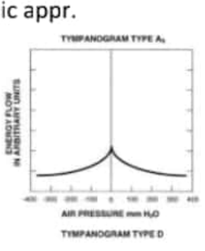
Other Congenital abnormalities of pinna:

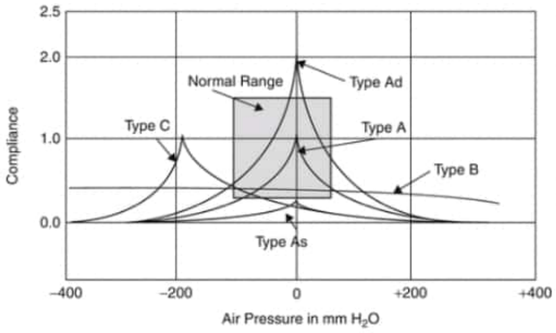
Case 2: A 45 year old female with family history of hearing loss from her mother's side developed hearing problems during pregnancy. Impaired hearing is B/L slowly progressive, improve in noisy surroundings. Study the given tympanogram and otoscopic appr.

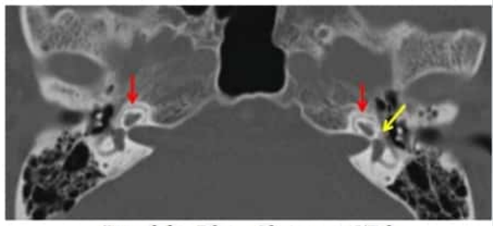
Ans: Otosclerosis

Tympanogram→ Type As (Hypomobile)

Otoscopy →Schwartz sign/Flamingo pink sign







Double Ring Sign on CT in OTOSCLEROSIS

DOC- Sodium Fluoride

TOC- Stapedotomy (Not stapedectomy) (If Schwartz sign is +ve we avoid Sx)

M/C Site: Fistula Antefenestrum > Foot plate of stapes

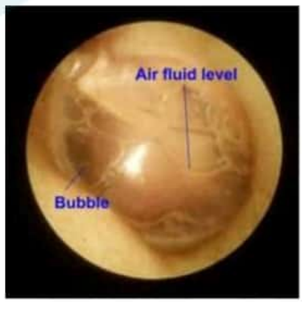
Case 3: Young male presents with an accident leading to loss of hearing in right ear. On otoscopic examination, the TM was intact. PTA shows air bone gap of 55dB in the right with normal cochlear reserve. Which is the expected Tympanometry finding?

→ Tympanic Membrane perforation.

Mx: Self healing by 3 months. Only keep the ear dry.

If there is sign of ossicular discontinuity, tympanometry will be hypermobile and there will be presence of Ad graph.

Case 4: A 6 year old child shown in the given mage with h/o recurrent URTI with mouth breathing and impaired hearing. Focus on the given image and comment on diagnosis?



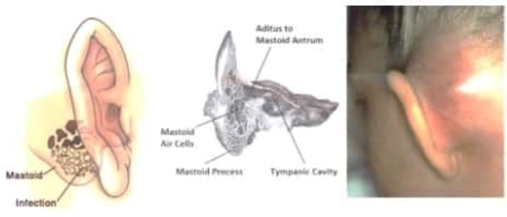
Ans. Serous Otitis Media (Glue Ear)

- Presence of air-fluid levels/blebs
- Mx: Myringotomy
- If not responding → Grommet insertion:
  - Insert after **3 months** of treatment failure
  - Small Antero-inferior/Radial incision

In ASOM incision is circumferential and postero-inferior

- TM is Congested
- C/f high grade fever
- M/C cause Streptococci
- Suppuration stage: Lighthouse sign
- Pre-suppuration: Cart-wheel sign
- TOC: Myringotomy

Case 5: A 18-year-old female who had continuous war discharge for the past 5 years. She was treated on antibiotics. O/E she was febrile. Mucopurulent foul-smelling scanty ear discharge was present in the right ear canal. Deeper part of the ear canal was filled with granulations and TM was not visualized. Tenderness was present over the right mastoid area. Left ear was normal. Tuning fork test showed CHL on right side. Nose and Throat were normal.



Dx: Attico-antral Unsafe CSOM

M/C Complication: **Mastoiditis**

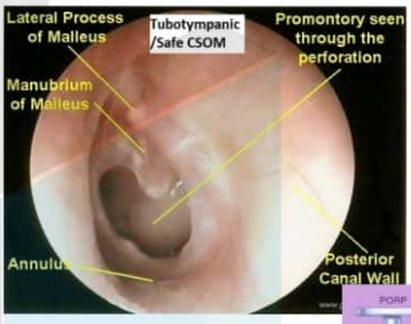
- M/C Sign: Tenderness
- Earliest Sign: Ironing of mastoid
- Hallmark sign: Sagging of EAC

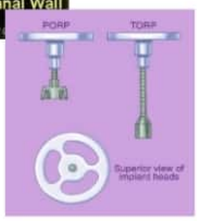
M/C Intracranial Complication: Meningitis

Types of Cholesteatoma

Congenital (McKenzie)

Primary Acquired	Secondary Acquired
1. Retraction pocket (Wittmaack)	1. Squamous metaplasia
2. Basal cell hyperplasia (Ruedi)	2. Epithelial migration (Habermann)
3. Squamous metaplasia (Sade)	**Tertiary Acquired**
	1. Post-traumatic
	2. Post-tympanoplasty





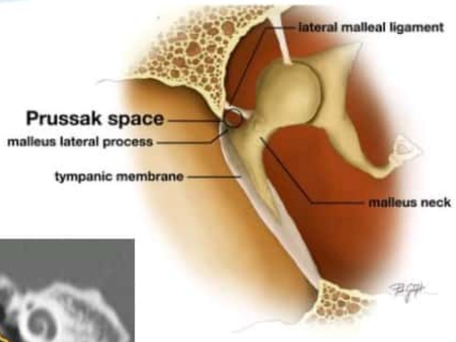
T/t of Tubotympanic CSOM: Tympanoplasty +/- Ossicular Chain reconstruction

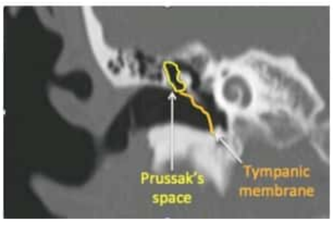
T/t of Atticoantral CSOM: Modified Radical Mastoidectomy

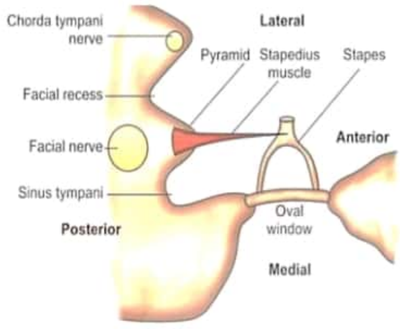
Case 7: Study the image and comment on the importance of the pointed space:

PRUSSAK SPACE.

- M/C site of cholesteatoma: Prussak Space
- M/C site for recurrance of cholesteatoma is sinus tympanum
- M/C site of Meniere is endolymphatic sac.







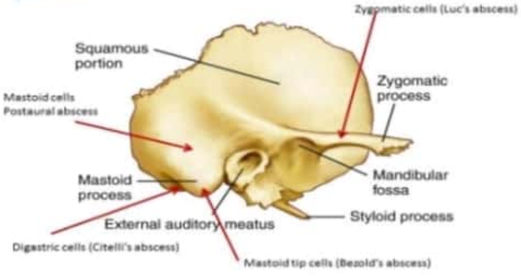
Case 8: 3 -year old child who presented with a c/o on and off right ear pain for 1-year duration. O/E Rt ear revealed a whitish soft tissue mass behind an intact TM at the anterosuperior quadrant. CT scan of the temporal bone revealed a soft tissue density within the epitympanic recess extending into the prussak's space and mastoid air cells through the aditus and antrum. Atticotomy was done. Intraoperatively, a whitish mass was found in the attic but limited to the epitympanum space. The bundle of malleus & incus was eroded. The mass was removed. The atticotomy area was covered with a tragal cartilage. Dx?

Ans. Congenital Cholesteatoma (Levanson's CRITERIA)

- **Levenson criteria (Modified Derlacki & Clemis)**
  - White mass medial to normal TM
  - Normal pars flaccida and tensa
  - No history of otorrhea or perforations
  - No prior otologic procedures
  - Prior bouts of otitis media not grounds for exclusion

Levanson's Classification is for MALIGNANT OTITS EXTERNA

Sites of pneumatisation of mastoid air cell system in relation to types of mastoid abscess



Case 9: Mastoiditis

M/C mastoid abscess: postaural abscess

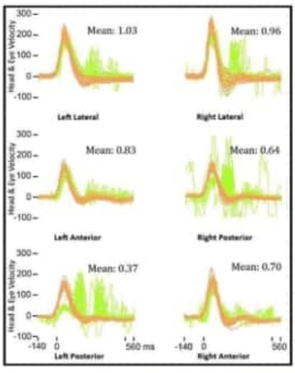
GRADENIGO Syndrome

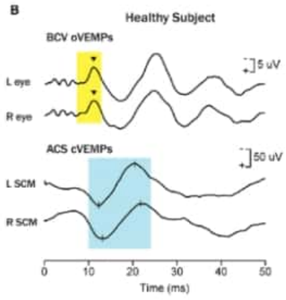
Petrous Bone involvement

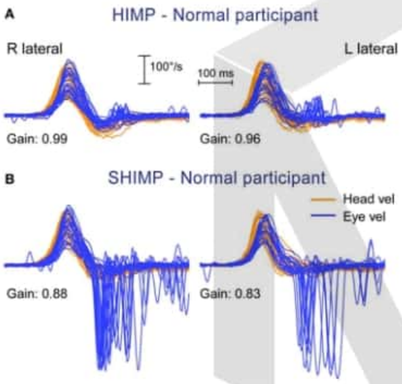
IOC: HRCT Petrous Bone

Case 10: Tests done for Semi-circular canal dehiscence

Video Head Impulse Test

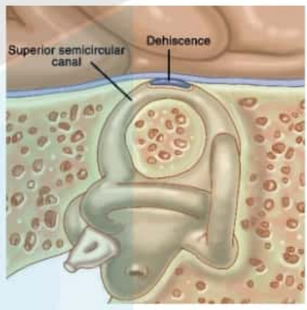






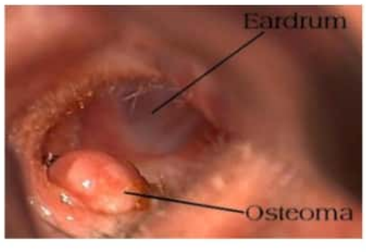
HIMP: Head Impulse Test

SHIMP: Suppression Head Impulse Test



Case 11: 50 year old female c/o hearing loss, vertigo, pain and tinnitus. CT shows hyperdense pedunculated mass arising from the tympanosquamous suture and lateral of the thalamus. HPE shows mass is covered with periosteum and squamous epithelium and consists of lamellated bone surrounding fibrovascular channels with minimal osteocysts. Dx?

Ans. Osteoma



- U/L- Osteoma
- B/L- Exostoses

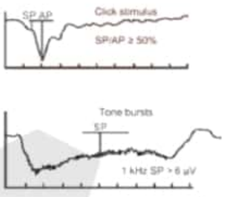
- ➢ Osteoma is slow growing and never becomes malignant
- ➢ Aka surfer's ear, as can happen by swimming in cold water
- ➢ TOC: Surgical excision

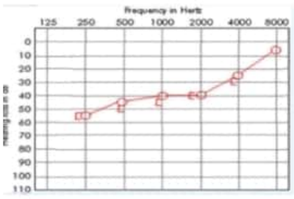
Case 12: GLOMUS Tumour

- Image: Brown's sign
- T/t: Preoperative embolization, Surgery, Radiotherapy

Case 13: Meniere's Disease

- Rising Sun sign
- Low Frequency Hearing loss
- IOC: Electrocochleography
- TOC: medical- low salt diet etc

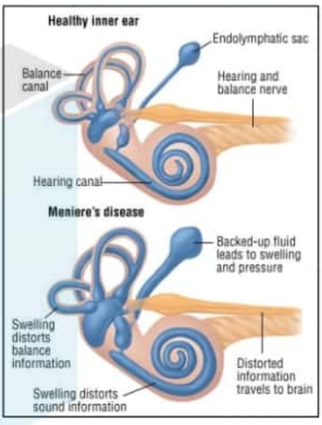




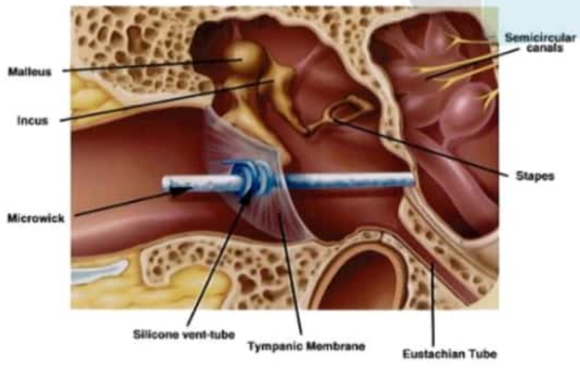
I. Pharmacotherapy/conservative therapy
(symptomatic therapy, Betahistin, i.v.-therapy [Osmofundin, steroids], intratympanic steroid application, supportive psycho-therapy)

Hearing

	+	−
II.	Saccus decompression	Gentamicin application
III.	Saccus revision/saccotomy	Gentamicin application
IV.	Neurectomy of the vestibular nerve (disabling vertigo, rapidly progressing course)	Cochleo-sacculotomy/ (labyrinthektomy) (with simultaneous cochlear implantation)



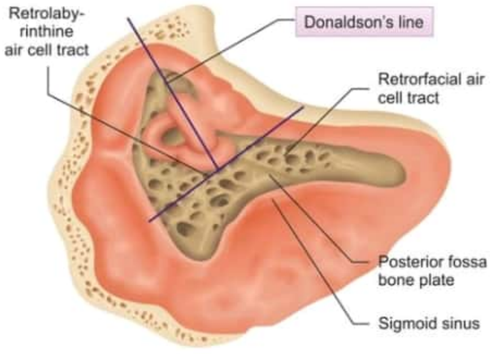
SILVERSTEIN MICROWICK



MENIETT DEVICE THERAPY

Low pressure pulse generator. Pressure pulses transmitted to round window via grommet → displace endolymph → relieve endolymph hydrops. Used for 5 min, TID.

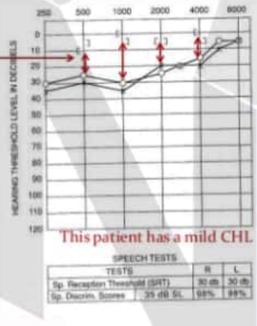
Surgical landmark: Donaldson's Line



Case 14: Conductive Hearing Loss

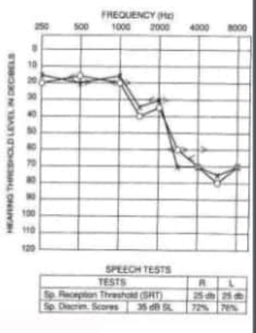
Conductive Hearing Loss

- Normal BC thresholds
- Abnormal AC thresholds
  - An air-bone gap is present at .5, 1, 2, and 4 kHz
- WRS should be nearly normal, as there is no damage to the cochlea/nerve

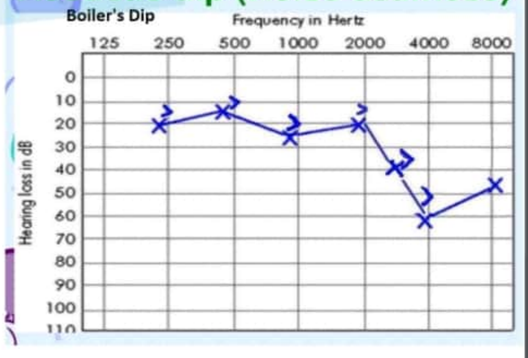


Sensorineural Hearing Loss

- Abnormal AC and BC thresholds
- No air-bone gap
- WRS will vary depending on degree of loss and cochlear vs. neural damage
- According to the PTA method of determining degree of HL, this patient has a slight SNHL.
- However, due to the sloping configuration, it is more accurate to define the loss as a slight-sloping-to-severe SNHL.



Acoustic dip (Noise deafness)



Acoustic dip is aka Boiler's Notch

Case 15: Tympanosclerosis

Causes:

- Long term otitis media
- Artherosclerosis
- Over use of grommet

Treatment: Hearing Aids

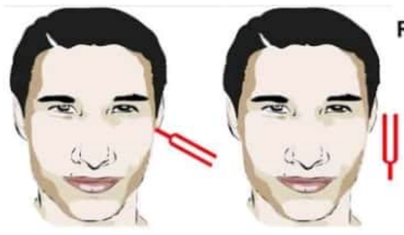
Case 16: Types of Incision in Ear surgeries

← Wilde's Incision

Lempert/Heerman → incision (Endaural)

Rosen's Incision: Endomeatal approach

Case 17: Tuning Fork tests



Rinne's Test

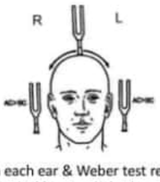
With a 512 Hz tuning fork press against the mastoid bone and then hold it 1cm away from the ear.

'Which is louder, behind the ear or in front?'

Weber's Test

512 Hz Tuning Fork placed in midline.

'Where can you hear the buzzing noise?'



- Positive Rinne in each ear & Weber test referred equally to each ear indicating symmetrical hearing in both ears with normal hearing or bilateral equally reduced sensorineural hearing loss.

Case 18: Malignant otitis Externa

Hint: Diabetic Patient
Cause: Pseudomonas

Gallium Scan: Prognosis
Technetium Scan: Diagnosis

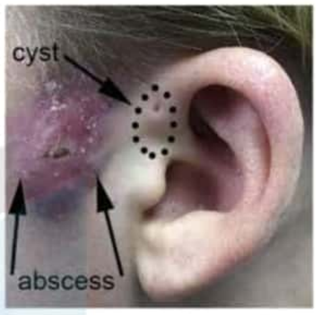
ESR is a good tool to monitor disease activity

T/T 3rd Gen Cephalosporin (It takes 2 weeks for ESR to come down after t/t) + Surgical debridement

Case 19: HEARING AIDS

BAHA

M/C complication of BAHA: Skin Reaction leading to abscess formation →



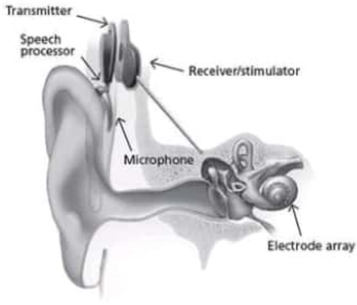
BTE

CIC

ITE

- Cochlear implant: Sensory Deafness
  - Kept in Scala Tympani via Round Window
  - M/C indication: Mondini's Dysplasia
- Brainstem implant: neural deafness
  - Kept in Lateral Recess of 4th Ventricle

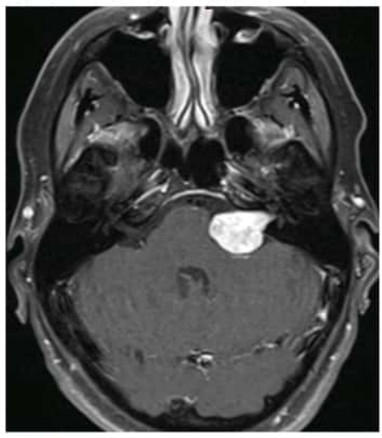
Ear with cochlear implant

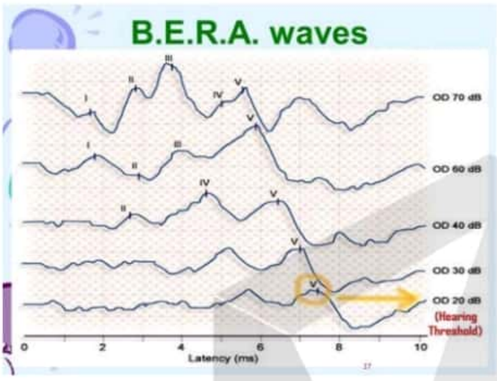


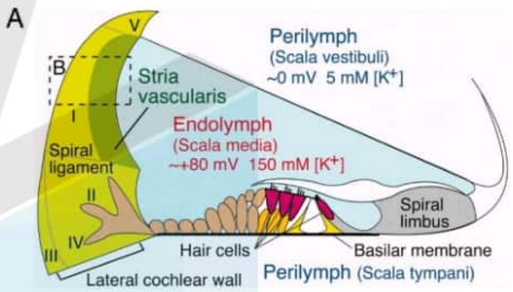
Case 20: A 40 year old women presents with a h/o progressively decreased hearing loss in her left ear over the past few years. She noticed the hearing deficit when trying to use the phone with the left ear. She has recently c/o intermittent dizziness, tinnitus in the left ear and vague left sided headache

Dx: Acoustic Neuroma

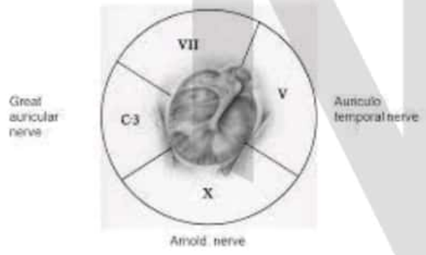
- Ix: MRI→ Ice cream cone appearance
- M/C tumor of CP angle
- Inferior division of vestibular nerve is involved
- Audiometry of choice: BERA
- Hitselberger sign positive

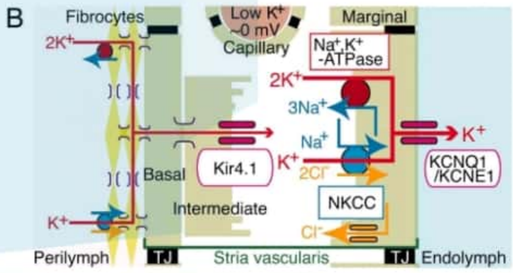


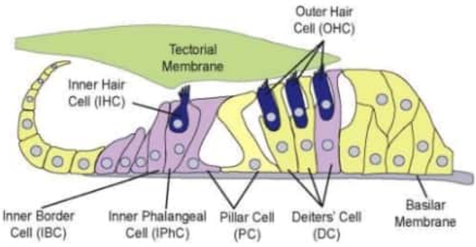




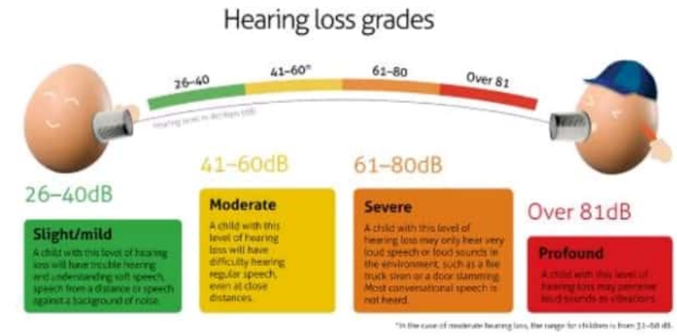
Nerve supply of external auditory canal







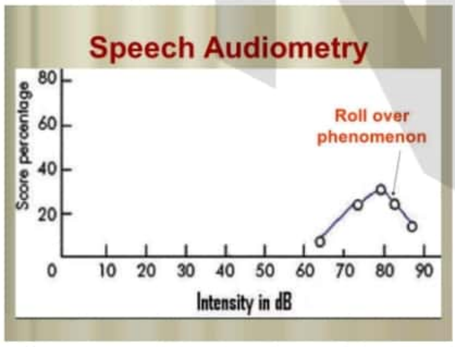
characteristic	Outer hair cell	Inner hair cell
Number	12,000	3500
Location	Farther from modiolus	nearer
No. of rows	3-4	1
Shape of hair cells	Cylindrical	Flask shape
no. of rows of cilia	6-7 per cell	2-4 rows per cell
Steriocilia arrangement	W or v shape	Shallow U shape
Length of steriocilia	Long & thin	Short & fat
Motility	Motile	nonmotile



	Right	Left
Air Conduction	O	X
•with masking	△	□
Bone Conduction	<	>
•with masking	⊏	⊐
No Response	↙	↘

Degree of hearing loss estimated by Rinne testing

Rinne test result	Estimated conductive loss
Negative, 256 Hz Positive, 512 and 1024 Hz	Mild conductive loss of 20-30 dB
Negative, 256 and 512 Hz Positive, 1024 Hz	Moderate conductive loss of 30-45 dB
Negative, 256, 512, 1024 Hz	Severe conductive loss of 45-60 dB

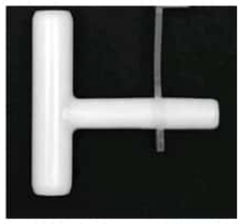


SWIMMER'S EAR
TELEPHONIST EAR
SINGAPORE EAR
TROPICAL EAR

- 1ST STAPEDECTOMY BY JOHN.SHEA
- **Julius Lempert** - Father of Modern Otology
- Modern **theory** of basilar-membrane "resonance" by **Von Bekesy**
- **William House** Father of neuro otology

Nose, Pharynx and Larynx

Q1 A CHILD WITH CONGENITAL RESPIRATORY DIFFICULTY, STRIDOR HAS UNDERGONE SURGERY WITH PLACEMEMT OF THE DEVICE SHOWN IN IMAGE.

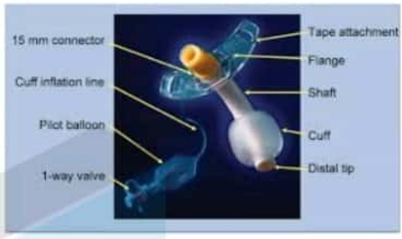


MONTGOMERY'S T-TUBE IN CONGENITAL SUBGLOTTIC STENOSIS

- Surgery: Laryngo-tracheal reconstruction
- Graft used to enlarge the diameter: Rib graft
- Topic Medication to reduce restenosis- Mitomycin C
- Don't confuse T tube with the PVC Cuffed tracheostomy tube

Chevalier Jackson Tracheostomy Tube

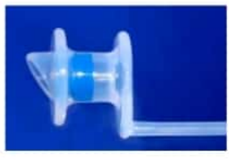
Fuller's bivalve metallic tube



Q2: Name the device being used in the picture:

Ans: Electrolarynx/ artificial larynx

Q3 Name the device being used in the picture by a post-total laryngectomy patient



Ans: Tracheoesophageal Puncture Device (TEP)

Examples: Blom Singer, Panje, Provox (Best)

Q4. Name the procedure done at the site marked with 3 dots:

Ans: Cricothyroidotomy – can support the airway for 48 hours

Done for acute airway emergencies.

Q 5. Sudden Aphonia & choking while eating. Identify the maneuvre being done.

Ans: Heimlich's Maneovre

- Direction of pressure: backwards and upwards
- Hand on the epigastrium

Q6. A CHILD WITH CONGENITAL INSPIRATORY STRIDOR WITH SUPRAGLOTTIC COLLAPSE LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?

Ans. Laryngomalacia (Omega Epigottis)

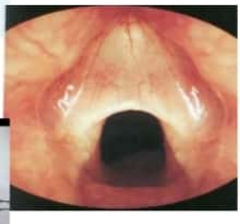
Q5. 4 YR CHILD CHRONIC HOARSENESS OF VOICE. LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?

Ans. JUVENILE PAPILLOMA OF LARYNX aka RECURRENT RESPIRATORY PAPILLOMATOSIS

Cause – HPV 6, 11

Treatment: CO2 laser
Intralesional CIDOFOVIR to prevent reccurence. Other agents are: Cis-Retinoic Acid, Indol-3-carbinorl, Interferon alpha.

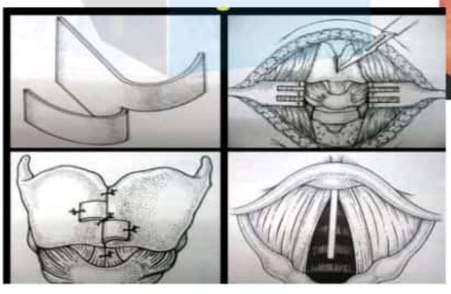
Q6. NEWBORN CHILD WITH HOARSE CRY LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?



Ans. Glottic Web

T/t- CO2 Laser

Prevention of reformation→ MC'NAUGHT KEEL



Q7. CHRONIC SMOKER WITH HOARSE VOICE LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?

Ans. Reinke's Edema (Smoker's Larynx)

MCC: Smoking

Q8. A PATIENT WITH HEARTBURN, SOUR ERUCTATIONS & HOARSE VOICE. LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?

Ans. Vocal Nodule

MCC: Vocal Abuse > Laryngopharyngeal reflux

Treatment: Voice Rest/Speech therapy + PPIs

Q9: A PATIENT WITH HEARTBURN, SOUR ERUCTATIONS & HOARSE VOICE. LARYNGEAL ENDOSCOPY IMAGE GIVEN IN PICTURE. WHAT IS DIAGNOSIS?

Ans. Pseudosulcus Vocalis

Temporary fold on vocal cord mucosa because of Laryngopharyngeal reflux.

Dx: 24- HOUR DOUBLE PROBE PH MONITORING

Q10. Videostroboscopy

- Method used to visualize vocal fold vibration
- Uses synchronized, flashing light passed via flexible or rigid telescope
- Flashes of light are synchronized to vocal fold vibration at slightly slower speed, allowing examiner to observe it during sound production in slow motion
- Information is essential for planning effective phonomicrosurgery
- Provides useful, real-time information concerning nature of vibration, image to detect vocal pathology, and permanent video record of examination
- Improves sensitivity of subtle laryngeal diagnoses

- Videostroboscopy has evolved as most practical and useful technique for clinical evaluation of visco-elastic properties of phonatory mucosa
- painless, office-based procedure
- essential evaluation of laryngeal mucosa, vocal fold motion biomechanics, and mucosal vibration
- key elements for detecting and assessing pathology as well as determining impact on voice and airway function

Q11. ATROPHIED TURBINATES, FOUL SMELLING CRUSTS. NASAL ENDOSCOPY PICTURE GIVEN IN IMAGE WHAT IS DIAGNOSIS?

Ans. Atrophic Rhinitis

Q. 12. ATROPHIED TURBINATES, FOUL SMELLING CRUSTS. EXTERNAL NASAL PICTURE GIVEN IN IMAGE WHAT IS DIAGNOSIS?

Ans. Rhinoscleroma (Woody Nose/ Tapir Nose)

TOC: Tetracycline + Streptomycin

Pathology: Russel Bodies & Nikolas cells

3: 49 YEAR OLD PATIENT WITH NASAL MASS & EPISTAXIS WHAT
IAGNOSIS?

. Rhinosporidiosis (Mulberry like nasal mass)

Q14: 49 YEAR OLD PATIENT WITH NASAL MASS & EPISTAXIS
WHAT IS DIAGNOSIS?

Ans. Inverted Papilloma

Sx: Medial Maxillectomy

URE'S INCISION FOR LATERAL RHINOTOMY APPROACH
D FOR MEDIAL MAXILLECTOMY IN INVERTED PAPILLOMA OF NOSE

. 53 YEAR OLD MALE PATIENT WITH EXTERNAL NASAL PICTURE
EN IN IMAGE. WHAT IS DIAGNOSIS?

. Potata Nose / Rhonophyma

rtrophy of sabecous glands of skin of nose (No association with
ol)

't confuse with Potato Nose = Chemodectoma (Paraganglionoma)

Q16. 54 YEAR PATIENT WITH TELENGECTATIC ULCERATIVE LESION

Ans. Basal Cell Carcinoma = Rodent Ulcer

. ADULT PATIENT WITH HISTORY OF SINUSITIS DEVELOPS A FOREHEAD
ELLING AS SHOWN IN IMAGE WHAT IS DIAGNOSIS?

. POTT'S PUFFY TUMOUR= SUBPERIOSTEAL FRONTAL ABSCESS as there
protosis.....Differential: Mucocele of the frontal bone

. ADULT PATIENT WITH HISTORY OF SINUSITIS DEVELOPS A
EHEAD SWELLING AS SHOWN IN IMAGE WHAT IS DIAGNOSIS?

. Frontal Mucocele (d/t proptosis of the eye)

Q19. 7 YEAR OLD CHILD HIT WITH CRICKET BAT ON FACE DEVELOPS FACIAL SWELLING AND ANTERIOR RHINOSCOPY PICTURE GIVEN IN IMAGE. WHAT IS TREATMENT?

Ans. Septal Hematoma (Dx: Aspiration/Drainage)

For septal perforation→ Septal Button

Q 20. 7 YEAR OLD CHILD HIT WITH CRICKET BAT ON FACE DEVELOPS FACIAL SWELLING AND X- Ray PICTURE GIVEN IN IMAGE. WHAT IS TREATMENT?

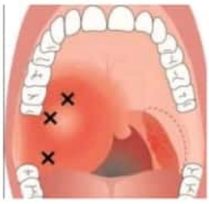
Ans. If swelling not yet- immediate reduction

If swelling is present- reduction after 7 days

Q21 43 YEAR OLD MALE WITH DYSPHAGIA, PLUMMY VOICE & TRISMUS. WHAT IS DIAGNOSIS?

Ans. QUINSY= PERITONSILLAR ABSCESS

(No Outer neck swelling)



If same C/F +ne with external nexk swelling: answer is parapharyngeal abscess →

Quincke's Disease

Isolated Angioneurotic edema of the uvula

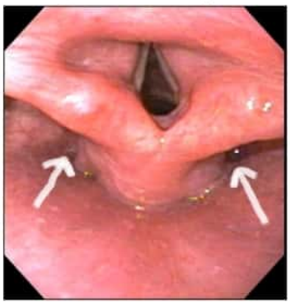
Q22. 33 YEAR OLD LADY WITH TRISMUS, CHIN SWEELING AFTER AN EPISODE OF PAIN DUE TO DENTAL CARIES WHAT IS THE DIAGNOSIS?

Ans. Ludwig's Angina

Q 23. IDENTIFY THE ANATOMICAL LANDMARK MAEKED ARROW

Ans. Fossa of Russenmuller

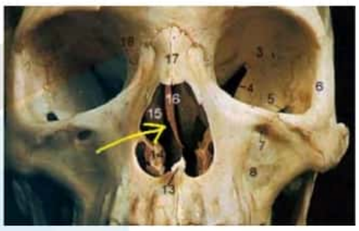
M/C site for origion of Nasopharyngeal Carcinoma



Q24. IDENTIFY THE ANATOMICAL LANDMARK MAEKED ARROW

Ans. Pyriform Sinus (part of Hypopharynx)

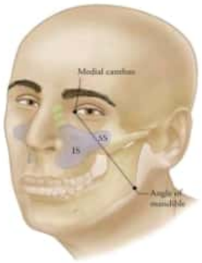
Q. 25: IDENTIFY THE ANATOMICAL LANDMARK MAEKED ARROW



Ans. Perpendicular plate of Ethmoid

Incisions and Lines

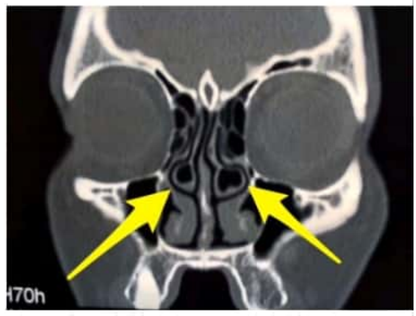
Ohnger's Line



WEBER FERGUSSON INCISION USED FOR TOTAL MAXILLECTOMY

MOURE'S INCISION FOR LATERAL RHINOTOMY APPROACH
USED FOR MEDIAL MAXILLECTOMY
IN INVERTED PAPILLOMA OF NOSE

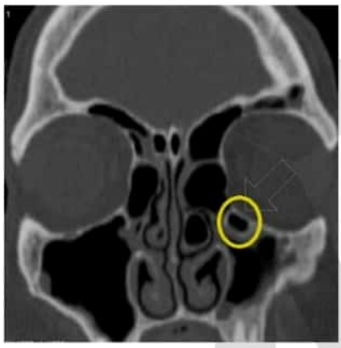
← GLUCK SORENSON INCISION
USED FOR TOTAL LARYNGECTOMY
IN CARCINOMA LARYNX



Concho Bullosa →

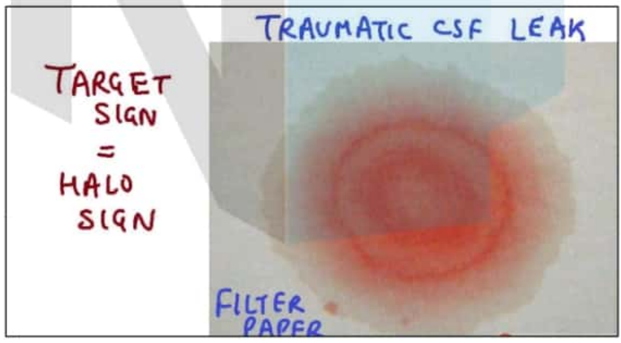
(cell within the middle turbinate)

M/C anatomical variation of ethmoid air cells



← Haller Cell (Present below the orbit)

Anatomical variation



Mucormycosis

Allergic Fungal Sinusitis